

WHAT IS CLAIMED IS:

1. A method for managing a plurality of printing devices connected on a network, said method comprising the steps of:
- detecting a printing device connected on the network;
  - requesting information from the detected printing device;
  - receiving the requested information from the printing device; and
  - creating a print queue for the printing device based on the received information.
2. A method according to Claim 1, wherein the printing device is detected by detecting an address assignment message sent between an address server and the printing device over the network.
3. A method according to Claim 2, wherein the address assignment message is a DHCP message.
4. A method according to Claim 2, wherein the address assignment message contains an IP address and a MAC address corresponding to the printing device.
5. A method according to Claim 1, wherein the printing device is detected by sending a request message to each of a plurality of network addresses and receiving a response message from the printing device located at one of the plurality of network addresses.
6. A method according to Claim 5, wherein the plurality of network addresses comprises a numerical range of IP addresses.



15. A method according to Claim 14, wherein the configuration data includes an IP address, a MAC address, a print queue name, a server associated with the print queue and printing capabilities corresponding to the printing device associated with the print queue.

16. A method according to Claim 14, further comprising the step of creating a print queue web page containing a plurality of links representing each of the print queue entries in the print queue configuration database.

17. A method according to Claim 16, further comprising the step of receiving from a workstation on the network a selection of one of the plurality of links on the print queue web page, and in response to the selection, configuring the workstation to print to the print queue represented by the link.

18. A method according to Claim 17, wherein configuring the workstation to print to the print queue comprises transferring a print driver corresponding to the print queue to the workstation.

19. A method according to Claim 14, further comprising the steps of:

detecting a new IP address of one of the plurality of printing devices having a corresponding print queue entry in the print queue configuration database;

updating a configuration of the corresponding print queue in response to detecting a new IP address of the printing device, so that the print queue is based on the new IP address; and

updating an IP address in the print queue entry corresponding to the print queue in response to detecting a new IP address.

20. A method according to Claim 14, further comprising the steps of:

detecting new identification information of a print queue corresponding to one of the plurality of printing devices having a corresponding print queue entry in the print queue configuration database;

updating the identification information in the print queue entry corresponding to the print queue in response to detecting the new identification information; and

updating a connection between a network workstation and the print queue with the new identification information.

21. A method according to Claim 20, wherein the identification information includes a print queue name.

22. A method according to Claim 20, wherein the identification information includes a server that manages the print queue.

23. A method according to Claim 1, wherein a print queue is not created for the printing device if it is determined that a number of existing print queues is larger than a predetermined number.

24. A method according to Claim 1, further comprising the step of creating a queue service web page which provides a user interface to a workstation on the network for print queue management.

25. A method according to Claim 24, wherein the user interface provides a process for manual creation of a print queue.







44. A network management device according to Claim 42, the method further comprising the step of creating a print queue web page containing a plurality of links representing each of the print queue entries  
5 in the print queue configuration database.

45. A network management device according to Claim 44, the method further comprising the step of receiving from a workstation on the network a selection  
10 of one of the plurality of links on the print queue web page, and in response to the selection, configuring the workstation to print to the print queue represented by the link.

46. A network management device according to Claim 45, wherein configuring the workstation to print to the print queue comprises transferring a print driver corresponding to the print queue to the workstation.  
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47. A network management device according to Claim 42, the method further comprising the steps of:  
detecting a new IP address of one of the plurality of printing devices having a corresponding  
25 print queue entry in the print queue configuration database;

updating a configuration of the corresponding print queue in response to detecting a new IP address of the printing device, so that the print queue is  
30 based on the new IP address; and

updating an IP address in the print queue entry corresponding to the print queue in response to detecting a new IP address.

48. A network management device according to Claim 42, the method further comprising the steps of:  
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5           updating the identification information in  
the print queue entry corresponding to the print queue  
in response to detecting the new identification  
information; and

49. A network management device according to  
Claim 48, wherein the identification information  
15 includes a print queue name.

51. A network management device according to Claim 29, wherein a print queue is not created for the printing device if it is determined that a number of existing print queues is larger than a predetermined number.

53. A network management device according to  
Claim 52, wherein the user interface provides a process  
35 for manual creation of a print queue.

54. A network management device according to Claim 52, wherein the process for manual creation of a print queue comprises the steps of:

receiving a user selection from the user  
5 interface designating a printing device on the network;  
obtaining information about the printing  
device in response to receiving the user selection; and  
creating a print queue, in response to a  
command input into the user interface, corresponding to  
10 the printing device based on the obtained information.

55. A network management device according to Claim 53, wherein the user interface provides a function for managing print jobs contained in a  
15 designated print queue.

56. A network management device according to Claim 29, the method further comprising the steps of:  
continuously polling printing devices  
20 connected to the network;  
determining if a configuration of the  
printing devices has changed; and  
updating the print queue corresponding to a  
printing device whose configuration has been determined  
25 to have changed.

57. Computer-executable process steps stored on a computer-readable medium, said computer-executable process steps for managing a plurality of printing  
30 devices on a network, said computer-executable process steps executable to perform a method comprising the steps of:  
detecting a printing device connected on the  
network;  
35 requesting information from the detected  
printing device;



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71. Computer-executable process steps  
according to Claim 70, wherein the configuration data  
includes an IP address, a MAC address, a print queue  
name, a server associated with the print queue and  
5 printing capabilities corresponding to the printing  
device associated with the print queue.

72. Computer-executable process steps  
according to Claim 70, the method further comprising  
10 the step of creating a print queue web page containing  
a plurality of links representing each of the print  
queue entries in the print queue configuration  
database.

73. Computer-executable process steps  
according to Claim 72, the method further comprising  
the step of receiving from a workstation on the network  
a selection of one of the plurality of links on the  
print queue web page, and in response to the selection,  
20 configuring the workstation to print to the print queue  
represented by the link.

74. Computer-executable process steps  
according to Claim 73, wherein configuring the  
25 workstation to print to the print queue comprises  
transferring a print driver corresponding to the print  
queue to the workstation.

75. Computer-executable process steps  
30 according to Claim 70, the method further comprising  
the steps of:

detecting a new IP address of one of the  
plurality of printing devices having a corresponding  
print queue entry in the print queue configuration  
35 database;

updating a configuration of the corresponding  
print queue in response to detecting a new IP address

updating an IP address in the print queue entry corresponding to the print queue in response to detecting a new IP address.

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10         detecting new identification information of a
        print queue corresponding to one of the plurality of
        printing devices having a corresponding print queue
        entry in the print queue configuration database;

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        updating a connection between a network
workstation and the print queue with the new
20  identification information.

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79. Computer-executable process steps according to Claim 57, wherein a print queue is not created for the printing device if it is determined that a number of existing print queues is larger than a  
35 predetermined number.

80. Computer-executable process steps according to Claim 57, the method further comprising the step of creating a queue service web page which provides a user interface to a workstation on the network for print queue management.

81. Computer-executable process steps according to Claim 80, wherein the user interface provides a process for manual creation of a print queue.

82. Computer-executable process steps according to Claim 80, wherein the process for manual creation of a print queue comprises the steps of:

receiving a user selection from the user interface designating a printing device on the network; obtaining information about the printing device in response to receiving the user selection; and creating a print queue, in response to a command input into the user interface, corresponding to the printing device based on the obtained information.

83. Computer-executable process steps according to Claim 81, wherein the user interface provides a function for managing print jobs contained in a designated print queue.

84. Computer-executable process steps according to Claim 57, the method further comprising the steps of:

continuously polling printing devices connected to the network;

determining if a configuration of the printing devices has changed; and

updating the print queue corresponding to a printing device whose configuration has been determined to have changed.

85. A computer-readable medium which stores computer-executable process steps, the computer-executable process steps to manage a plurality of printing devices on a network, said computer-executable process steps comprising process steps executable to perform a method comprising the steps of:
- detecting a printing device connected on the network;
  - requesting information from the detected printing device;
  - receiving the requested information from the printing device; and
  - creating a print queue for the printing device based on the received information.
86. A computer-readable medium according to Claim 85, wherein the printing device is detected by detecting an address assignment message sent between an address server and the printing device over the network.
87. A computer-readable medium according to Claim 86, wherein the address assignment message is a DHCP message.
88. A computer-readable medium according to Claim 86, wherein the address assignment message contains an IP address and a MAC address corresponding to the printing device.
89. A computer-readable medium according to Claim 85, wherein the printing device is detected by sending a request message to each of a plurality of network addresses and receiving a response message from the printing device located at one of the plurality of network addresses.



90. A computer-readable medium according to Claim 89, wherein the plurality of network addresses comprises a numerical range of IP addresses.

5                    91. A computer-readable medium according to  
Claim 89, wherein the plurality of network addresses  
comprises a plurality of IP address contained within a  
routing table.

10            92. A computer-readable medium according to Claim 85, wherein the printing device is detected by broadcasting a request message over the network and receiving a response message from the printing device connected on the network.

15                    93. A computer-readable medium according to  
Claim 85, where the information is requested by sending  
an SNMP message to the detected printing device.

20                    94. A computer-readable medium according to  
Claim 85, wherein the received information comprises a  
type of printing device corresponding to the type of  
the detected printing device.

25                    95. A computer-readable medium according to  
Claim 94, wherein the received information further  
comprises printing capabilities of the detected  
printing device.

30                   96. A computer-readable medium according to  
Claim 85, the method further comprising the step of  
publishing the print queue to the network.

97. A computer-readable medium according to  
35 Claim 96, wherein the print queue is published to the  
network according to a set of predetermined rules.

98. A computer-readable medium according to Claim 85, the method further comprising the step of creating a print queue entry in a print queue configuration database, the print queue entry including configuration data related to the print queue.

99. A computer-readable medium according to Claim 98, wherein the configuration data includes an IP address, a MAC address, a print queue name, a server associated with the print queue and printing capabilities corresponding to the printing device associated with the print queue.

100. A computer-readable medium according to  
15 Claim 98, the method further comprising the step of  
creating a print queue web page containing a plurality  
of links representing each of the print queue entries  
in the print queue configuration database.

20           101. A computer-readable medium according to  
Claim 100, the method further comprising the step of  
receiving from a workstation on the network a selection  
of one of the plurality of links on the print queue web  
page, and in response to the selection, configuring the  
25 workstation to print to the print queue represented by  
the link.

102. A computer-readable medium according to Claim 101, wherein configuring the workstation to print  
30 to the print queue comprises transferring a print driver corresponding to the print queue to the workstation.

103. A computer-readable medium according to  
35 Claim 98, the method further comprising the steps of:  
detecting a new IP address of one of the  
plurality of printing devices having a corresponding

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print queue entry in the print queue configuration
database;
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updating a configuration of the corresponding  
print queue in response to detecting a new IP address  
5 of the printing device, so that the print queue is  
based on the new IP address; and

updating an IP address in the print queue entry corresponding to the print queue in response to detecting a new IP address.

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104. A computer-readable medium according to Claim 98, the method further comprising the steps of:

detecting new identification information of a  
print queue corresponding to one of the plurality of  
15 printing devices having a corresponding print queue  
entry in the print queue configuration database;

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        updating the identification information in
        the print queue entry corresponding to the print queue
        in response to detecting the new identification
20  information; and

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updating a connection between a network workstation and the print queue with the new identification information.

25           105. A computer-readable medium according to  
Claim 104, wherein the identification information  
includes a print queue name.

106. A computer-readable medium according to  
30 Claim 104, wherein the identification information  
includes a server that manages the print queue.

107. A computer-readable medium according to Claim 85, wherein a print queue is not created for the printing device if it is determined that a number of existing print queues is larger than a predetermined number.

108. A computer-readable medium according to Claim 85, the method further comprising the step of creating a queue service web page which provides a user interface to a workstation on the network for print queue management.

109. A computer-readable medium according to Claim 108, wherein the user interface provides a process for manual creation of a print queue.

110. A computer-readable medium according to Claim 108, wherein the process for manual creation of a print queue comprises the steps of:

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    receiving a user selection from the user
15  interface designating a printing device on the network;
    obtaining information about the printing
    device in response to receiving the user selection; and
    creating a print queue, in response to a
    command input into the user interface, corresponding to
20  the printing device based on the obtained information.

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111. A computer-readable medium according to Claim 109, wherein the user interface provides a function for managing print jobs contained in a designated print queue.

112. A computer-readable medium according to Claim 85, the method further comprising the steps of:

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        continuously polling printing devices
30  connected to the network;
        determining if a configuration of the
        printing devices has changed; and

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        updating the print queue corresponding to a
        printing device whose configuration has been determined
35  to have changed.

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